

REMARKS

This Response is offered in reply to Office Action mailed October 24, 2003. A petition and fee for a two month time extension are enclosed.

In paragraph 1 of the office action, the examiner asks for clarification with respect to claims 4 and 11. Applicants have now cancelled claims 4 and 11 as effected in the amendment of May 28, 2002. The inclusion of claims 4 and 11 in the amendment of August 4, 2003, was an inadvertent error. Applicants have cancelled claims 4 and 11 as is apparent above. Applicants apologize for any confusion with respect to claims 4 and 11.

In paragraph 2 of the office action, claims 1, 4-6 and 13 are rejected under 35 USC 103(a) as obvious in view of the Mikami US Patent 6 549 840. In particular, the examiner cites column 2, lines 15-64 as well as other portions of the '840 patent.

This rejection is believed to be in error. In particular, so-called first and second aspects of the '840 patent (Figure 3 and 23) relate to control apparatus for a four-wheel drive automotive vehicle where the front wheels are driven by an engine/motor-generator (first drive power source) and the rear wheels are driven by a motor-generator (second drive power source), and the control apparatus permits the vehicle to be driven with an optimum ratio of distribution (proportion) of the drive force to the front wheels and the rear wheels (column 2, lines 1-7). Moreover, the first drive power source powers one of the front wheels and one of the rear wheels and the second drive source powers the other of the front wheels and the other of the rear wheels (column 2, lines 15-25). A torque distribution feedback control means is provided for controlling a front-rear torque distribution ratio, column 5, lines 55-67, corresponding to a ratio of front-wheel drive torque and rear wheel drive torque.

Referring to column 3, lines 11-34, the '840 patent teaches to control a ratio of the front drive force and the rear drive force and to change the ratio in response to the vehicle operator's desired value of the vehicle drive force. Also see column 4, lines 1-14 of the '840 patent.

Particularly, the '840 patent describes an engine 14/motor-generator 16 (MG16) to drive the front wheels via a continuously variable transmission 20 and an auxiliary rear motor/generator (RMG 70) to drive the rear wheels. Column 31, lines 7-52 and Figure 5 and Figure 37 describe controlling only the output torque of the motor-generator 70 driving the rear wheels within one of a plurality of output torque ranges to prevent overheating of the second drive source. The rear drive force to the rear wheels provided by RMG 70 is linearly reduced with a decrease of the operator's drive force T_r to reduce energy consumption and heating of the RMG 70. In summary, the first electric motor/generator (MG16) and the second electric motor/generator (RMG 70) are controlled in view of their thermal ratings so as to drive the front and rear wheels with front-rear torque distribution ratio for improved stability of drivability of the vehicle (column 48, lines 54-59 and Figure 15, column 49, lines 23-29, and subsequent text of the '840 patent) in a manner unlike the claimed invention.

At columns 50-61 of the '840 patent, an uphill-starting embodiment is described wherein the engine 14 and/or motor/generator 16 is/are operated to provide a drive force F_{T1} to the front wheels and the motor/generator RMG 70 provides an assisting drive force dF to the rear wheels (see column 56, lines 7-12). The ratio of the front-rear distribution of the vehicle drive force during starting of the vehicle is determined by the gradient of the uphill road as calculated for the assisting drive force provided by the RMG 70 (column 57, line 66 through column 58, line 3) in a manner unlike the claimed invention.

A so-called third aspect of the '840 patent is described at column 5, lines 22-67 and at column 66, lines 17-38 and involves driving the front wheels and rear wheels using a common drive power source. The '840 patent expressly teaches to control the ratio of the front drive force of a first drive source and the rear drive force of a second drive source using a drive force distributing clutch in a manner unlike the claimed invention. Column 10, lines 8-57 of the patent merely describe controlling the output torque of the second drive source within one of a plurality of output torque ranges to prevent overheating of the second drive source. At column 13, lines 55-67 of the patent, a front-rear torque distribution ratio can be controlled by the torque distribution feedback control means corresponding to a desired ratio of front-wheel drive torque and rear wheel drive torque. As mentioned, the ratio of the front drive force and the rear drive force is controlled by the drive force distributing clutch.

The '840 patent fails utterly to disclose Applicants' claim 1 wherein torque output of one of an engine and transmission of a vehicle is controlled when the vehicle is in the 4X4 mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation. Moreover, the '840 patent mentions nothing whatsoever regarding controlling torque output in the manner recited in Applicants' claim 1 to reduce sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation.

Reconsideration of the rejection of claims 1, 4-6, and 13 is requested. With respect to pending claims 5-6 and 13, the features recited in these claims are not disclosed or suggested in the '840 patent. For example, there is disclosure in the '840 patent of a speed parameter being engine speed for a vehicle with a manual transmission as recited in claim 5. Moreover, the examiner acknowledges in paragraph 4 of the office action that the '840

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patent does not disclose the features of claim 6. Further, Applicants believe that the examiner is incorrect in his comments regarding the features of claims 13 being disclosed at column 4, lines 14-34; column 7, lines 43-64; and column 15, lines 5-54 of the '840 patent. Applicants fail to find these claimed features.

In paragraph 4 of the office action, claims 2-3 are rejected under 35 USC 103(a) as obvious in view of the Mikami US Patent 6 549 840 taken with US Patent 5 853 342.

The gross deficiencies of the '840 patent are discussed above. The examiner acknowledges that the '840 patent does not disclose transmission output shaft torque and cites the '342 patent to make up for this deficiency. However, the '342 is not believed properly combined with the '840 patent as a result of the disparate drive systems involved in the patents which bear no resemblance to one another. Moreover, use of the transmission output shaft torque in the '840 patent still would not yield the claimed invention as should be apparent to the examiner from the above discussion of the '840 patent.

Reconsideration of the rejection of claims 2-3 is requested.

In paragraph 5 of the office action, claim 7 is rejected under 35 USC 103(a) in view of the Sakai US Patent 4 715 467 taken with US Patent 5 853 342.

Applicants believe the rejection of pending claim 7 is incorrect. In particular, at columns 5-8, lines 21-21 of the '467 patent cited by the examiner, the patent describes an infinitely variable belt-drive transmission 2 and an electromagnetic clutch 1 wherein the proportion of torque transmitted by clutch 1 to the rear auxiliary wheels is determined in step 97 (see patent Figure 3b) using a torque transmitting ratio K_2 for the rear auxiliary wheels and is controlled by a duty cycle calculated in step 101 (see patent Figure 3b) in a manner unlike and non-suggestive of Applicants' claim 7.

In addition, the examiner himself/herself acknowledges on page 3 of the office action that the '467 patent fails to disclose or suggest controlling torque output of one of the engine and transmission when the vehicle is in one of the other modes of operation as set forth in Applicants' claim 7.

The examiner cites columns 9-10, lines 6-14 of the '342 patent to make up for the deficiencies of the '467 patent. Applicants firstly do not believe the '467 patent and the '342 patent are properly combined given the disparate driving systems employed wherein the former employs an infinitely variable belt-drive transmission 2. Secondly, columns 9-10 of the '342 patent merely describe Figures 9 and 10 that involve a transfer case 20 having a gear reduction unit 230 to permit on-the-fly shifting between four-wheel high-range and low-range driving modes. Applicants fail to find any disclosure at columns 9-10 of the '342 patent of the features of claim 7 wherein torque output of one of an engine and transmission of a vehicle is controlled when the vehicle is in the 4X4 low mode using a calibration table stored in system memory and indicating a relationship of torque output as a function of accelerator pedal position and a speed parameter for reducing sensitivity of the torque output to accelerator pedal position in the 4X4 mode of operation. Moreover, the '342 patent mentions nothing whatsoever regarding controlling torque output in the manner recited in Applicants' claim 7 to reduce sensitivity of the torque output to accelerator pedal position in the 4X4 low mode of operation.

Reconsideration of the rejection of claim 7 is requested.

In paragraph 6 of the office action, claims 8-10 and 12 are rejected under 35 USC 103(a) in view of the same references as set forth for rejecting claims 1-2; 5, and 7.

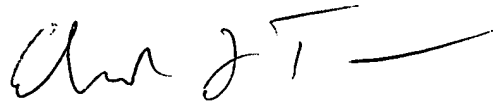
These rejections are believed incorrect for the reasons discussed in detail above as a result.

Reconsideration of the rejections of claims 8-10 and 12 is requested.

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Allowance of the pending claims is requested.

Respectfully submitted,



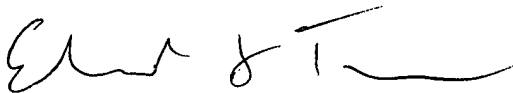
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